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Guidance on per- and polyfluoroalkyl substances (PFAS) in cattle and sheep

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contents

1. Introduction

This guideline supplements the Order on per- and polyfluoroalkyl substances (PFAS) in cattle and sheep. The regulations concern the Danish Veterinary and Food Administration's checks on cattle and sheep suspected of being contaminated with PFAS at a level that may pose a risk to food safety. The purpose of the guideline is to facilitate understanding of the rules concerning clarification of suspicions of contamination of cattle and sheep with PFAS, on the Danish Veterinary and Food Administration's implementation of official supervision of animals under suspicion and on the possibilities of lifting official supervision through testing of the animals.

2. Concepts and abbreviations

Identification code of the animal: As defined in Commission Delegated Regulation (EU) 2019/2035 of 28 June 2019.

Dangerous feed[1]: Feed shall be considered as dangerous for the intended use if it is considered to:

1) have an adverse effect on human and animal health; or
2) make a food derived from food-producing animals unsafe for human consumption.

Feed:	As defined in Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002.
Sheep:	As defined in Commission Delegated Regulation (EU) 2019/2035 of 28 June 2019.
Indicator value:	The DVFA indicator values for PFAS in water, feed and blood indicate when there is a risk that the EU maximum levels of PFAS in meat are exceeded, as laid down in Commission Regulation (EU) 2023/915 of 25 April 2023 setting maximum levels for certain contaminants in food[2]. The indicator values for water and feed have been established on the basis of the total daily tolerance for the intake of PFAS by the animal species.
Cattle:	As defined in Commission Delegated Regulation (EU) 2019/2035 of 28 June 2019.
Operator:	As defined in Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016.
PFAS:	Per- and polyfluorinated alkylated substances.
4 PFAS:	Includes the four PFAS for which EU maximum levels have been set in food. These substances are PFOA (perfluorooctanoic acid), PFNA (perfluorononanoic acid), PFOS (perfluorooctane sulfonic acid) and PFHxS (perfluorohexane sulfonic acid).
PFOS:	Perfluorooctane sulfonic acid.
Representative sample:	Samples from a group of animals exposed during the same period for the same contamination, sampled and analysed in accordance with the principles laid down in Commission Regulation (EU) 2022/1428 of 24 August 2022, Annex, Part A, Table 4. However, at least two animals must be sampled.

[1] See Article 15 of Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002.

[2] Commission Regulation (EU) 2023/915 of 25 April 2023 setting maximum levels for certain contaminants.

3. Animals suspected of contamination with PFAS

3.1 Feed and water found to be contaminated with PFAS

PFAS can be found everywhere in the environment, including on land grazed by food-producing animals. Currently in different contexts, state, regional and municipal environmental authorities, etc. carry out various measurements of PFAS in the environment in order to map the distribution of the substances and assess any consequences for the environment and health.

When the DVFA becomes aware that PFAS has been measured in feed or water intended for food producing animals, the DVFA assesses whether the measured PFAS content may give rise to food safety concerns. This includes an assessment of whether the content of PFAS in the animals' feed (e.g. grass or mowing from

grazing areas) and water (e.g. watercourses and surface water on the grazing area) may cause the animals to be suspected of contamination with PFAS. The Danish Veterinary and Food Administration does not itself carry out measurements of PFAS on pastureland.

The DVFA has set indicator values for when feed or water is considered to be 'contaminated' with PFAS at a level that may pose a risk to food safety. These values are based on existing knowledge on the uptake and accumulation of PFOS in cattle and sheep from feed and water, respectively. The Danish Veterinary and Food Administration's indicator values for PFAS in feed and water indicate when the PFAS content in water and feed is expected to accumulate in food-producing animals at a level that may lead to exceedance of the EU maximum levels for PFAS in meat from the animals. Limit values have been set for the substances PFOA, PFNA, PFOS, PFHxS and their sum (also referred to as 4 PFAS).

Exceeding an indicator value means that the feed is in principle considered dangerous feed under EU feed and food law and must therefore not be used for feeding the animal species to which the indicator value applies. This means that the animals must not have access to the contaminated feed.

The indicator values shall be related to the total amount of feed or water consumed by the animal on a daily basis. This means that if the animal also ingests feed or water that is not contaminated with PFAS, the indicator values will have to be reduced proportionally, as the animal's intake of PFAS with feed or water will have to be assessed for the total feed ration.

Indicator values for the levels of PFAS in feed or water for animal species other than cattle and sheep have not been established at this stage, as there are insufficient data to support this. The DVFA indicator values for PFAS in feed and surface water available to the animals are without prejudice to the quality criteria set by other authorities for PFAS in e.g. drinking water, bathing water and groundwater.

The DVFA indicator values for PFAS in feed and water for cattle and sheep respectively are set out in the Annex.

3.1.1 Rejection of contamination of feed and water

Feed, including grazing land, and water shall no longer be considered to have been found to be contaminated with PFAS, which may pose a risk to food safety, where one of the following conditions are met:

1. The suspicion of PFAS contamination of animals exposed to contaminated feed and/or water is rebutted by blood or meat samples (see section 3.3) and the results of the samples reflect the timing of the animals' exposure to the contamination.

Example: If the samples were taken in November and the animals have not had access to PFAS-contaminated feed and/or water since September, a theoretical back calculation to the expected PFAS content in the animals at the time of their last exposure to PFAS contamination in September shall be made when assessing the test result. The Danish Veterinary and Food Administration makes this calculation.

A rebuttal of a contamination of feed or water on this basis applies only to the animal species from which the blood or meat samples were taken. However, if the contamination of feed or water is ruled out in relation to grazing cattle, the contamination of feed or water is also considered to be ruled out for sheep. This is because the indicator values for PFAS in feed and water are higher for sheep than for cattle.

2. If the Danish Veterinary and Food Administration on another basis considers that the feed or water does not pose a risk to food safety. For example, if the landowner can explain that the previous sampling is not representative of a part of an area that was previously defined as a total area, or of the period during which the animals have grazed. Among other things, there may be factors such as topography, source of pollution,

etc., which may be decisive for the spread of the pollution, just as there may be a variation over time. It may also be the case that animals are cut off from access to specially polluted hotspots on the area, such as a waterhole or a drain, where elevated concentrations of PFAS have been measured.

3.2 Animals suspected of contamination with PFAS

Animals are considered to be suspected of contamination with PFAS if the animals have consumed feed and/or water found to be contaminated with PFAS for a total period of 30 calendar days or longer within 12 months. Feeding stuffs also include grass consumed by the animals by grazing or by feeding.

3.3 Animals under confirmed suspicion of contamination with PFAS

Animals are considered to be under confirmed suspicion of contamination with PFAS if there are results of blood or meat samples from animals suspected of contamination with PFAS and where the PFOS content in blood or the PFAS content in meat exceeds the DVFA indicator value for PFOS in blood or the EU maximum level for PFAS in meat, respectively.

Indicator values for PFOS in blood and EU maximum limits for 4 PFAS in meat are set out in the Annex.

4. Official supervision (OT)

4.1 Animals under official supervision

If animals are suspected or confirmed suspected (see sections 3.2-3.3) of contamination with PFAS, the DVFA places the animals under official supervision. The official supervision allows the DVFA to control that products from animals suspected or confirmed suspected of contamination with PFAS do not enter the food chain.

Official supervision means that the animals may not be sent for slaughter without the permission of the Danish Veterinary and Food Administration and that products of animal origin, including meat and in some cases milk from the animals, may not be included in the food chain. Whether milk from the animals can be placed on the market depends on a case-by-case assessment. Measurements of PFOS in milk from the animals may be included in the assessment.

Official supervision means that the animals must be removed from the area where the contamination was found. The official supervision follows the animals wherever they are.

As an operator, you must inform the DVFA before any sale of the animals to a new owner and provide information on the buyer’s herd number and the relevant identification numbers of the animals.

The offspring of animals under official supervision will automatically be subject to official supervision and will be subject to the same conditions as the dam.

The local veterinary unit of the DVFA notifies an operator both orally and in writing of the implementation of an official supervision. The detailed conditions for animals under official supervision are set out in the decision sent to the operator.

4.2 Authorisation for slaughter of animals under official supervision

If you as an operator wish to send an animal under official supervision for slaughter, e.g. with a view to analysing the content of PFAS in meat from the animal, it requires a separate permit from the Danish Veterinary and Food Administration. The Danish Veterinary and Food Administration may issue a certificate of approval for the animal, which must accompany the animal to the slaughterhouse.

A request for a certificate of approval must be sent digitally to the local veterinary unit of the DVFA no later than 14 calendar days before the animal is delivered for slaughter. The request shall specify the slaughterhouse to which the animal is to be delivered, the date of delivery of the animal to the slaughterhouse and the identification code(s) of that animal.

The carcass will be detained in the slaughterhouse until a meat sample has established that the meat complies with the maximum levels of PFAS set at Union level in accordance with Commission Regulation (EU) 2023/915 of 25 April 2023 setting maximum levels for certain contaminants in food.

4.3 Sampling for and analysis of PFAS for animals under official supervision (confirmation or rebuttal of suspicion)

An operator whose animals are placed under official supervision as a result of suspicion of contamination with PFAS may request the Danish Veterinary and Food Administration to have blood or meat samples taken from the animals in order to confirm or refute the suspicion.

If your animals have been grazing on an area which is found to be contaminated with PFAS, then the Danish Veterinary and Food Administration will do the sampling. This also applies if the animals have ingested PFAS contaminated grass to such an extent that the animals are suspected of contamination with PFAS, cf. section 3.2. The Danish Veterinary and Food Administration's local veterinary unit and the Danish Veterinary and Food Administration's meat inspection take blood or meat samples, respectively, within 14 days from the request or after further agreement with the operator concerned. If you as an operator do not want samples to be taken of animals suspected of contamination with PFAS, the animals will remain under official supervision.

Sampling shall in all cases be carried out by sampling a number of animals in the herd. The size of the sample will depend on the size of the herd, as a rule, samples are taken from at least 5 per cent of the animals in a group, but at least 2 animals. The result of a sample shall be considered representative if it is taken from a group of animals which have grazed the same area during the same time period and thus have been exposed to the same contamination. If the animals in a group have grazed the same area for different time periods, samples shall be taken from the animals that have grazed the longest on the area.

If sampling confirms the suspicion of contamination with PFAS in the animals, the DVFA maintains official supervision. The PFAS content in the animals will decrease over time when the contaminated feed and/or water is no longer available to the animals. The DVFA therefore carries out a further sampling when it considers that the levels of contamination have fallen below the indicator values set out in the Annex. The Danish Veterinary and Food Administration shall make an agreement with the operator for the time of the next sampling. For cattle, the half-life of PFAS in meat is estimated to be about 100 days.

4.4 Lifting of official supervision

Official supervision may be discontinued when the results of analyses of either blood or meat samples referred to in Section 4.3 show that:

- The level of PFOS in blood samples taken from the animals does not exceed the indicator value of PFOS in blood for the animal species concerned (see Annex).
- The PFAS content in meat samples from the animals does not exceed the EU maximum levels for 4 PFAS in meat, in accordance with Commission Regulation (EU) 915/2023 of 25 April 2023 setting maximum levels for certain substances in foodstuffs (see Annex).

The measurement uncertainty of the analysis shall be taken into account when assessing the analytical results. This means that an indicator value must be significantly exceeded in order for the official supervision of the animals to be maintained.

The Danish Veterinary and Food Administration shall notify the operator in writing of the lifting of official supervision.

4.4.1 Situations in which the official supervision cannot be lifted or there is no wish to lift it

Some animals may have been exposed to PFAS-contaminated feed and/or water to such an extent that the animals cannot be expected to reduce the PFAS content to a level where official supervision can be lifted. Even if the animals have been removed from the area where the contamination was found for a long period of time. There may also be situations where an operator does not wish to have samples taken from the animals. For example, if the primary purpose of the animals is nature conservation rather than food production. In such cases, the animals shall be removed from the contaminated area and the animals shall remain under official supervision.

For PFAS-contaminated areas subject to special nature protection considerations, it will be possible for the operator to request permission to let food-producing animals graze the contaminated areas and animals subject to such permission will be subject to a restriction on slaughter and use as food. As a result, the animals will no longer pose a risk to food safety and the DVFA will therefore lift the official supervision. The conditions for this are set out in the Order on the authorisation of grazing of contaminated areas with special nature conservation considerations and related guidance.

5. Sanction

Reference is made to the general principles on penalties set out in Chapter 13 of the DVFA's Control Guidelines.

DVFA, 29 November 2023

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Annex

Indicator values and limit values for pollution with PFAS

DVFA indicator values for contamination with PFAS

The DVFA indicator values for PFAS in water, feed and blood indicate when there is a risk that the EU maximum levels for PFAS in meat are exceeded, as laid down in Commission Regulation (EU) 2023/915 of 25 April 2023 setting maximum levels for certain contaminants in food[1].

1. Contamination found in feed	
The indicator values for <u>PFOS</u> are: – 0.03 microgram/kg for bovine animals. – 0.15 microgram/kg for sheep.	The indicator values refer to the sum of linear and branched stereoisomers, regardless of whether they are chromatographically separated or not. The indicator values have been established on the basis of the total daily tolerance for the intake of PFAS by the animal species.
For <u>PFAS,</u> corresponding values are: – 0.12 microgram/kg for cattle. – 0.60 microgram/kg for sheep.	The indicator values refer to the sum of 4PFAS and their linear and branched stereoisomers, whether chromatographically separated or not, and to the sum of measured PFAS. The indicator values have been established on the basis of the total daily tolerance for the intake of PFAS by the animal species. For the sum of PFAS, the lower concentrations are calculated on the assumption that all the values below the limit of quantification are zero.
2. Contamination found in water	
The indicator values for <u>PFOS</u> are: – 0.02 microgram/liter for bovine animals. – 0.11 microgram/liter for sheep.	The indicator values refer to the sum of linear and branched stereoisomers, regardless of whether they are chromatographically separated or not. The indicator values have been established on the basis of the total daily tolerance for the intake of PFAS by the animal species.

For <u>PFAS,</u> corresponding values are: – 0.08 microgram/liter for cattle. – 0.44 microgram/liter for sheep.	The indicator values refer to the sum of 4PFAS and their linear and branched stereoisomers; whether chromatographically separated or not, and to the sum of PFAS measured. The indicator values have been established on the basis of the total daily tolerance for the intake of PFAS by the animal species. For the sum of PFAS, the lower concentrations are calculated on the assumption that all the values below the limit of quantification are zero.
3. Confirmed suspicion of contamination in blood	
The indicator values for <u>PFOS</u> are: – 3.3 microgram/liter for cattle. – 6.7 microgram/liter for sheep.	The indicator values refer to the sum of linear and branched stereoisomers, regardless of whether they are chromatographically separated or not.

EU maximum levels for PFAS in bovine and ovine meat under Commission Regulation (EU) 2023/915 of 25 April 2023 setting maximum levels for certain contaminants

	Maximum level, microgram/kg				
	PFOS	PFOA	PFNA	PFHxS	Sum of PFOS, PFOA, PFNA and PFHxS
Meat of bovine animals	0.30	0.80	0.20	0.20	1.3
Meat of sheep	1.0	0.20	0.20	0.20	1.6